

**Notice of Allowability**

Application No.

10/632,625

Examiner

Anthony Fick

Applicant(s)

TERAO ET AL.

Art Unit

1753

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicant's after final amendment of 6/11/07.
2. ☒ The allowed claim(s) is/are 1-10 and 12-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

## **DETAILED ACTION**

### ***Remarks***

1. Applicant's cancellation of claims 11 and 21 through 29 has made moot the previous rejections of the claims. The rejections are therefore withdrawn.

### ***Allowable Subject Matter***

2. Claims 1 through 10 and 12 through 20 are allowed.
3. The following is an examiner's statement of reasons for allowance: independent claims 1 and 12 require a plurality of radiation reflectors, the reflectors each having an asymmetric portion of a parabolic or similarly shaped surface having a vertically and a longitudinally curved configuration, and the reflectors shielding direct radiation from a transmitter or receiver and directing off-axis radiation to/from the transmitter or receiver. The closest prior art is Stern et al. (U.S. 5,344,496).

Stern discloses a lightweight solar concentrator cell array as shown in figures 2, 3 and 4.

Regarding claim 1, figures 3 and 4 show a photovoltaic module comprising a plurality of radiation reflectors each comprising an asymmetric portion of a parabolic or similarly shaped surface, the plurality being serially arranged and a plurality of photovoltaic cells, 22. Figure 3 shows that each cell is shielded from direct radiation by an adjacent reflector and with the corresponding reflector directing off-axis radiation to the cell (dotted lines in figure 3).

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Regarding claims 2 and 3, Stern discloses the reflectors are a formed material with a reflective surface, and the material itself is cured to be reflective (column 4, paragraph 3).

Regarding claims 4, 5, and 6, Stern further discloses the reflectors can include a reflective coating of aluminum or silver (column 4, paragraph 3).

Regarding claim 7, figure 2 shows the reflectors formed as one unit.

Regarding claim 10, figure 3 shows the photovoltaic cells are located at or near the focus of the reflector (column 4, paragraph 1).

Regarding claim 12, figures 1 and 2 show a radiation reflector array comprising a plurality of reflectors arranged in rows and columns each reflector comprising an asymmetric portion of a parabolic or similarly shaped surface. Figure 3 shows the reflectors direct radiation to or from a focus hidden behind an adjacent reflector with the radiation being off-axis with respect to the reflector.

Regarding claim 13, Stern discloses the reflectors are a formed material with a reflective surface, and the material itself is cured to be reflective (column 4, paragraph 3).

Regarding claims 14, 15, and 16, Stern further discloses the reflectors can include a reflective coating of aluminum or silver (column 4, paragraph 3).

Regarding claim 17, figure 2 shows the reflectors formed as one unit.

Regarding claim 18, figure 3 shows the radiation is transmitted to or from the focus of the reflector (column 4, paragraph 1).

Regarding claim 20, the reflectors shown in figure 3 have an appendage, 26, that could allow mounting of a receiver or transmitter. Further, as Stern discloses attachment of the cells to the reflectors, the means of attachment, adhesives, bonding, etc., read on an appendage for mounting a receiver or transmitter.

While Stern does disclose the device described above, figure 2 shows the reflectors having only a vertically curved configuration with a straight longitudinal configuration. This configuration allows the reflectors of Stern to be placed into an array and allows larger sized reflectors to act as heat sinks for the attached solar cells. The increased size of the reflectors increases the amount of heat that they can absorb, thus keeping the solar cells at lower temperatures to improve solar cell efficiency. It would not be obvious to alter the configuration of Stern to curve the reflectors in the longitudinal direction as well because this would reduce the mass of the reflectors and not allow them to operate as efficient heat sinks. Therefore one skilled in the art would not make such a choice and it would destroy the invention of Stern.

The other reflectors within the art that have vertical and longitudinal curved configurations are utilized with solar cells placed directly in the center of the curved surface and does not block the cell from receiving direct radiation. Therefore these reflectors do not meet the requirements of the claims. Thus the claims are allowable over the prior art. The remaining claims all depend from claims 1 and 12 and are allowable for the same reasoning.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick  
AU 1753  
July 13, 2007.

*ADF*

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*July 13, 2007*